

WHAT IS CLAIMED IS:

1. A method for producing an epitaxial wafer by depositing a film of epitaxial layer through an epitaxial growth over a top surface of a silicon wafer, said method comprising:
  - a first cleaning step for cleaning a top and a back surfaces of a silicon wafer with a SC-1 liquid and a SC-2 liquid;
  - a second cleaning step, after said first cleaning step, for cleaning said back surface of said silicon wafer to be a water repellent surface; and
  - a third cleaning step for cleaning said top surface of said silicon wafer to be a water repellent surface, wherein after said three steps of cleaning having been finished, a film of epitaxial layer is deposited through an epitaxial growth over said top surface of said silicon wafer.
2. A method for producing an epitaxial wafer in accordance with claim 1, in which said second and said third cleaning steps are performed simultaneously.
3. A method for producing an epitaxial wafer in accordance with claim 1, in which a contact angle of said water repellent surface is  $30^{\circ}$  or greater.
4. A method for producing an epitaxial wafer in accordance with claim 2, wherein a contact angle of said water repellent surface is  $30^{\circ}$  or greater.
5. A method for producing an epitaxial wafer in accordance with any one of claim 1 to 4, in which said second and said third cleaning steps provide the cleaning by using at least either one of HF solution

or BHF solution.

6. A method for producing an epitaxial wafer by depositing a film of epitaxial layer through an epitaxial growth over a top surface of a silicon wafer, said method comprising:

a fourth cleaning step for cleaning a top and a back surfaces of a silicon wafer with a SC-1 liquid and a SC-2 liquid;

a fifth cleaning step, after said fourth cleaning step, for cleaning said back surface of said silicon wafer to be a water repellent surface; and

a sixth cleaning step for cleaning said top surface of said silicon wafer to be a hydrophilic surface, wherein

after said three steps of cleaning having been finished, a film of epitaxial layer is deposited through an epitaxial growth over said top surface of said silicon wafer.

7. A method for producing an epitaxial wafer in accordance with claim 6, in which said fifth and said sixth cleaning steps are performed simultaneously.

8. A method for producing an epitaxial wafer in accordance with claim 6, in which a contact angle of said hydrophilic surface is 20° or smaller and a contact angle of said water repellent surface is 30° or greater.

9. A method for producing an epitaxial wafer in accordance with claim 7, in which a contact angle of said hydrophilic surface is 20° or smaller and a contact angle of said water repellent surface is 30° or greater.

10. A method for producing an epitaxial wafer in accordance with any one of claim 6 to 9, in which said sixth cleaning step provides a cleaning by a combination of a sponge brush with a purified water.

11. An epitaxial wafer with a film of epitaxial layer deposited through an epitaxial growth over a top surface of a silicon wafer, said wafer being produced by a method comprising the steps of:

cleaning a top and a back surfaces of a silicon wafer by using a SC-1 liquid and a SC-2 liquid;

subsequently processing said back surface of said silicon wafer into a water repellent surface;

further processing said top surface of said silicon wafer into a water repellent surface; and

then depositing said film of epitaxial layer through an epitaxial growth over said top surface of said silicon wafer.

12. An epitaxial wafer with a film of epitaxial layer deposited through an epitaxial growth over a top surface of a silicon wafer, said wafer being produced by a method comprising the steps of:

cleaning a top and a back surfaces of a silicon wafer by using a SC-1 liquid and a SC-2 liquid;

subsequently processing said back surface of said silicon wafer into a water repellent surface;

further processing said top surface of said silicon wafer into a hydrophilic surface; and

then depositing a film of epitaxial layer through an epitaxial growth over said top surface of said silicon wafer.